

Buckinghamshire **Live Lab** *Trial* *Final Business Case & Impact* *Assessment*

E-Bikes





Bike Use to May 2022

- Use of the bikes is lower from December 2021 – April 2022 than the corresponding period from the previous year
 - The average temperature in this period has been colder by around 1c which may be a factor
 - Rental income in this period is around 70% of income in December 20 – April 21
- Usage is dominated by riders at the weekend
- There has been a 20% increase in riders choosing to cycle between the two stations in the past 6 months
- People who unlock and lock at the same dock choose to cycle almost twice as far as those who cycle between the stations
- Increasing the number of locations may improve network effects of locations to cycle, thus increasing usage
- We recommend a higher price point for the e-bikes





Strategic Case (1)

The Strategic Case sets out why the intervention is needed, how it furthers national, regional and local policy and whether there is a clear case for change.

National, regional and local policy fit	The Department for Transport’s Gear Change paper clearly lays out the plan to improve cycling an active travel in the UK. CycleBucks is one initiative of several within the Council that is attempting to increase cycling in the region.
The case for intervention that meets those policy needs	The e-bike trial allowed a small-scale intervention to test whether there was appetite for people visiting the area or who lived locally to substitute car journeys for e-bike rentals. This would be good for rider’s health and reduce the number of cars on the road, as well as provide a revenue stream.
The national, regional & local needs and challenges	The location provided an interesting challenge. Waddesdon Manor is a major tourist destination and the train station at Aylesbury Vale offered the chance to address a missing link for people who did not drive.
The wider case for the intervention	Carbon reduction and air quality improvement are at the forefront of decision making within local government and this scheme could play it’s part in creating modal shift from car journeys.





Strategic Case (2)



Social

The trial could impact how people in the region view cycling. Seeing more people on bikes can help break down the perceived barriers to cycling and encourage more diverse groups to take up cycling.



Technological

As the trial used existing bicycle technology and used an app from another project, there was no technological innovation.



Environmental

Increased cycling can have an impact on carbon and particulate emissions through fewer car journeys, improving health, and downstream benefits associated with a more active populace.



Legal

The only issue is finding a body to own the scheme.



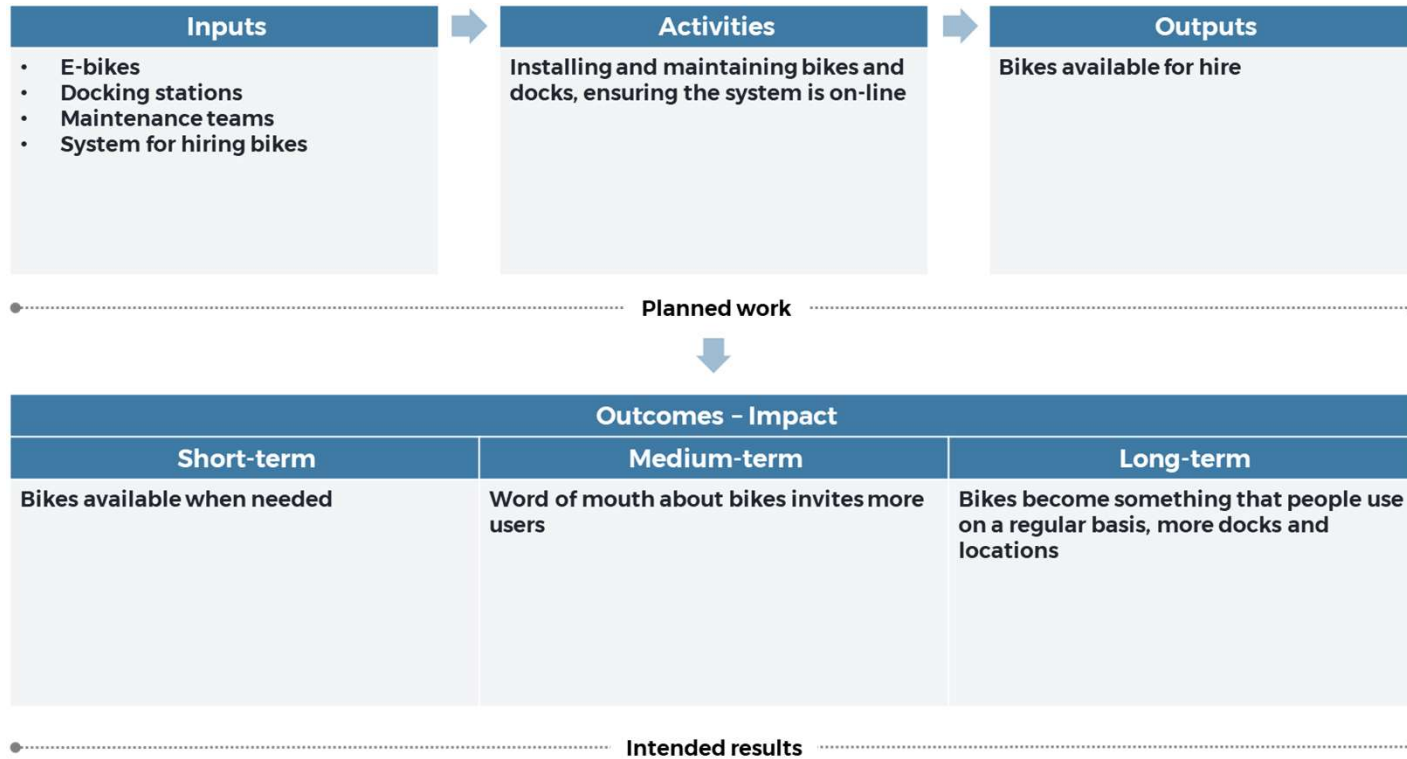
Economic

The scheme has the potential to create a revenue stream for the scheme owner. This will likely subsidise the operating costs rather than be profit generating.



Strategic Case (3)

The Logic Impact Model shows how the inputs and activities carried out during the trial flow through to short, medium and long term impacts.





Economic Case - Costs

- Capital costs:

Owner	Cost	Details
Waddesdon Manor		
Bucks CC	£2,805	Painting of e-bike car park, WiFi Infrastructure
Bucks CC	£22,000	Groundworks
E-bike Operator	£40,000	Feeder pillar, docking stations, installation
Aylesbury Vale Parkway		
Bucks CC	£6,312	eBike Power supply and Civil works
E-bike Operator	£40,000	Feeder pillar, docking stations, installation
Bicycles		
E-bike Operator	£70,000	Bike purchase - £3,500 per bike x 20
Total	£181,117	

- Annual costs

- Costs incurred for the running of the trial are between £50,000-£60,000
- £21,000 is the stated annual cost for the E-bike Operator to provide maintenance on the scheme for the next 12 months.
- £10,892 is the stated annual cost for operations and online services(via E-bike Operator) for the operational costs of the scheme for the next 12 months.

- Renewals

- It is estimated that the scheme would cost £2,600 per month to continue.
- Each new dock and 10 bikes for additional locations would cost in the region of £75,000 to deploy





Economic Case – Benefits Realised through the Trial

Monetisable

- The income for the trial was c.£12k since the launch of the scheme. Where there are public/school holidays, usage and income has been greater. On average, bikes are only in use around 10% of the time at weekends, this is a drop in use compared to the shorter period (Jun 20 to Oct 21) previously assessed when it was around 12%.
- Income between November 2021-April 2022 compared with November 2020-April 2021 was 25% lower. This may be because of worse weather over the winter, the novelty factor had dimmed, or because in the previous year, people were out and about locally because lockdowns had just finished but other restrictions were in place.

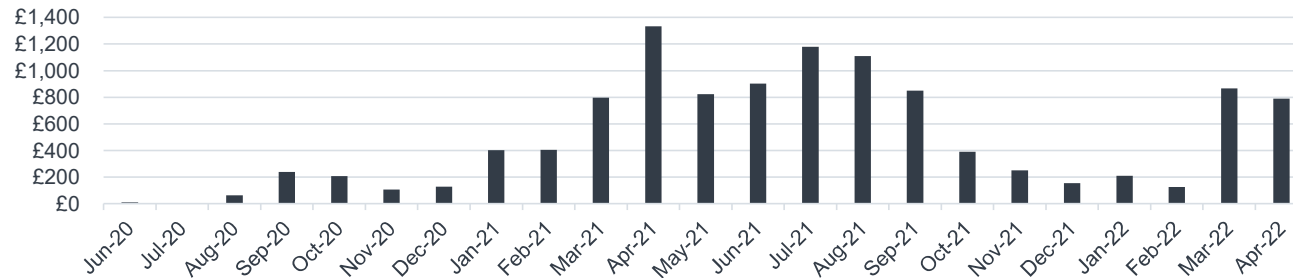
Quantifiable not monetisable

- The ride data strongly indicates that only a small minority of journeys are A-B, though this has increased compared to the previous report. Few car journeys will have been replaced by e-bike journeys.

Qualitative

- Anecdotal evidence from stakeholders indicates that users broadly consider the e-bikes to be a cheap and novel source of fun. The trial may have been a gateway to users investing in their own e-bike ('try before you buy') but we do not have specific evidence for this.

Income by Month





Cost benefit analysis – results (1)

Note: Assumes no further expansion of capacity or locations, simply improved revenue through increased advertising, removal of Covid test site at Aylesbury Vale, and no return to Covid-restrictions.

Scenarios	1 Double revenue received compared to first 12 months	2 Quadruple revenue received compared to first 12 months	3 Eight times revenue received compared to first 12 months	MAY 2022 UPDATE 70% of the income compared to previous report
Discount factor	3.5%			
Return period	10 years (lifespan of e-bikes)			
Base year	2022			
Present value costs	£499,845			
Present value benefits	£117,219	£234,438	£468,876	£41,027
Net present value	-£382,626	-£265,407	-£30,968	-£458,819
Benefit cost ratio	0.23	0.47	0.94	0.08
Break even year	NA	NA	NA	NA





Cost benefit analysis – results (1)

Note: Assumes no further expansion of capacity or locations, simply improved revenue through increased advertising, removal of Covid test site at Aylesbury Vale and no return to Covid-restrictions.

Actual Results

The first six months has seen a drop off in usage. The righthand column on the previous table highlights the actual usage of bikes compared to the hypothetical scenarios proposed based on best case usage.

The remaining calculations are still valid as they are based on 12 months worth of data, rather than just 6 months of data.





Cost benefit analysis – results (1)

Note: Assumes no further expansion of capacity or locations, simply improved revenue through increased advertising, removal of Covid test site at Aylesbury Vale and no return to Covid-restrictions.

Scenarios

The previous table demonstrates three alternative scenarios where the e-bikes are expected to double, quadruple, or increase their receipts by a factor of eight. No other elements have changed. The rightmost column shows the actual results for the period up to May 2022. We have left the forecast figures as they are and will update when we have a full 12 months to compare against.

1. Double revenue

- This is based on a simple increase in receipts that should be easily achievable.
- This increase does not lead to a break even point. The income would not cover the monthly cost of running the scheme.

2. Quadruple revenue

- This figure is based on the comparison in receipts between September 2020 and September 2021.
- The increase in receipts only leads to income outstripping costs in the months with the heaviest usage.

3. Eight times revenue

- This figure is based on optimum utilisation of the e-bikes. Currently, on average, they are only in use around 8% of the time (12% at weekends and 6% during the week).
- It will be difficult to achieve this figure and sustain it given the narrow scope of the e-bike intervention.
- There is high footfall along the Greenway and with additional advertising it might be possible to achieve this an increase in ridership. Additional sponsorship of the e-bikes may cover the shortfall.

4. Actual Results, May 2022

- The last six months has seen a drop off in usage but this may be the result of colder temperatures
- It could also be due to a “bounce” on the back of lockdowns ending last year.





Cost benefit analysis – results (2)

Note: Assuming expansion of service with 2 new docks with 10 bikes each in central Aylesbury and Westcott Venture Park.

Key assumptions	1 Double revenue received in previous 12 months	2 Quadruple revenue received in previous 12 months (Sep20- Sep21 comparison)	3 Eight times revenue received in previous 12 months
Discount factor	3.5%		
Return period	10 years (lifespan of e-bikes)		
Base year	2022		
Present value costs	£775,237		
Present value benefits	£234,438	£468,876	£937,753
Net present value	£-540,799	£-306,360	£162,517
Benefit cost ratio	0.3	0.6	1.21
Break even year	NA	NA	7





Cost benefit analysis – results (2)

Note: Assuming expansion of service with 2 new docks with 10 bikes each in central Aylesbury and Westcott Venture Park.

Scenarios

The previous table demonstrates three alternative scenarios where there are 2 additional e-bike docks each containing 10 bikes. Usage of the e-bikes is calculated at double, quadruple, or 8 times the previous year, per bike. Maintenance and operations have been increased by 50% to cover the additional bikes assuming there would be some economies of scale.

1. Double revenue

- This is based on a simple increase in receipts that should be very achievable.
- This increase does not lead to a break even point. The income would not cover the monthly cost of running the scheme.

2. Quadruple revenue

- As above, this figure is based on Sep-Sep figures, but with 2 additional docks.
- Using this increase in receipts only leads to income outstripping costs occasionally, but not on a regular basis.

3. Eight times revenue

- This figure is based on optimum utilisation of the e-bikes. Currently, on average, they are only in use around 8% of the time and (12% at weekends and 6% during the week).
- 8 times revenue comfortably meets the costs within the lifecycle of the e-bikes with a healthy return.
- There is high footfall along the Greenway and with additional advertising it might be possible to achieve this an increase in ridership.
- Additional sponsorship of the e-bikes may increase awareness as well as provide additional income.





Commercial Case

Procurement journey

The procurement was relatively straightforward. The E-bike Operator had previously quoted the Council for a larger number of cycles and were approached to tender on a smaller scale for this project. The E-bike Operator's scheme was seen as a more affordable option compared to other providers.

Implementation efficiency

In the course of the evaluation, we spoke to stakeholders at Chiltern Railways (owners of Aylesbury Vale Parkway), Waddesdon Manor, Buckinghamshire Council, and the E-bike Operator. The consensus was that the implementation was drawn out and that scheme promotion should have begun sooner. This would have encouraged more people to use the e-bikes after the Covid-19 restrictions were eased in April 2021 and through the summer.

The installation of docks at Aylesbury Vale Parkway was handled poorly as they did not receive the necessary approvals until after the project had gone live.

Additionally, the location of the e-bikes at Aylesbury Vale Parkway became a Covid test site immediately before the launch of the scheme there in March. This was unforeseen but had a very significant effect on the amount of people who wanted to use the e-bikes as they became less visible.

Originally, Waddesdon Manor had agreed to assist with redistribution of the e-bikes using their shuttle bus, however Covid meant they stopped running this service so this was an additional operating cost picked up by the E-bike Operator.





Financial Case

Affordability

The scheme is small scale and would need a significant increase in receipts or riders to be affordable – in the region of 10x the receipts with just two docks. However, the bikes are under-utilised (on average only used 12% of the time during the day at weekends). There is capacity with the bikes to achieve an increase in receipts, as well as enough foot traffic on the Greenway to potentially provide the users. However, as things stand, the bikes are not commercially self-sustaining without additional funding from another source.

Financial model

If conducting this intervention again, we would recommend a higher price for using the bikes and more locations to increase the options for riders. This would create a financial model that might sustainably recoup the costs.

Funding sources

At the time of writing, no sources of further funding have come forward, however, if the scheme could be expanded to include Westcott Venture Park, then this may be a more attractive proposition for additional funding or even sponsorship from a local business.





Management Case (1)

Project management approach

Buckinghamshire Council is keen to continue the project after the trial ends in September 2022 on a “Business as Usual” basis, but this would need to be financially viable for whoever steps in to own the project. The scheme is relatively self-managing by the E-bike Operator but does require an officer within the Council to own – it has been suggested that Strategic Transport & Infrastructure may manage the project. We would advise having a clear chain of command with concrete objectives from the start of the project to assist project officers who work on the scheme.

Delivery plan

The original concept was for a large number of bikes serving the whole county. This was scaled back at Buckinghamshire Council’s request to just serve Waddesdon Manor and Aylesbury Vale Parkway. The scheme was hampered by a delay in approval from Chiltern Railways in approving a site at the train station.

Project management team and qualifications

The scheme is easily manageable if there is a project officer working at least one day per week within Buckinghamshire Council to ensure the smooth running of the scheme.





Management Case (2)

Benefit realisation and contract management plan

There has been little advertising of the scheme which has not helped the benefits realisation. If doing this again, one body responsible for all promotion and costs would enable smoother management and ease any contract disputes. This would also make the benefits easier to calculate.

Evaluation strategy

We only evaluated e-bikes, rather than considering other forms of mobility. Alternative solutions to e-bikes are available, there is already a trial of e-scooters in the region which is in line with the Department for Transport's wider trials. This is to be evaluated separately and may offer a good alternative if e-bikes are deemed unfit.

If revisiting this project, we would recommend a larger trial with more docking stations and locations. We would suggest integrating the e-bikes in with other mobility options such as e-scooters, buses and trains to make the transition seamless between modes.

